Amendments to the Claims

IN THE CLAIMS:

This listing of claims shall replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) A method comprising:

    ~~providing a layer 3 virtual private network (VPN) to a first customer;~~

    ~~providing backbone access to a second customer; and~~

    maintaining on a single network element <u>of a network provider</u> a first ~~set of~~

    ~~information~~ <u>context</u> for ~~the~~ <u>a</u> first customer separately from a second ~~set of~~

    ~~information~~ <u>context</u> for ~~the~~ <u>a</u> second customer <u>wherein the contexts enable</u>

    <u>isolation of traffic processed and provide the ability to give access to a</u>

    <u>given customer's information while restricting access to other information</u>

    <u>in the single network element;</u>

    <u>providing a layer 3 VPN (virtual private network) to the first customer based upon</u>

    <u>the first context; and</u>

    <u>providing non-VPN access to a backbone to a second customer based upon the</u>

    <u>second context.</u>

2. (Currently Amended) The method of claim 1 wherein

    the first ~~set of information~~ <u>context</u> includes configuration information for the

    layer 3 VPN and

    the ~~second set of information~~ <u>context</u> includes configuration information for the

    second customer.

3. (Currently Amended) The method of claim 1 wherein

the first ~~set of information~~ <u>context</u> includes routing information for the layer 3 VPN and

the second ~~set of information~~ <u>context</u> includes routing information for the second customer.

4. (Original) The method of claim 1 further comprising maintaining on the network element a set of non-VPN related information for the first customer.

5. (Currently Amended) The method of claim 1 further comprising:

providing a second layer 3 VPN to a third customer;

maintaining on the single network element a third ~~set of information~~ <u>context</u> for the second layer 3 VPN and

maintaining a single exterior gateway protocol process table for the first layer 3 VPN and the second layer 3 VPN.

6. (Currently Amended). A computer implemented method comprising:

maintaining a first set of information for a first layer 3 <u>VPN (</u>virtual private network ~~(VPN)~~, the first set of information for including a first value identifying the first layer 3 VPN;

separately maintaining a second set of information for a second layer 3 VPN, the second set of information for including a second value identifying the second layer 3 VPN;

associating the first value with a first route distinguisher;

associating the second value with a second route distinguisher; and

maintaining a single <u>EGP (</u>exterior gateway protocol (~~EGP~~) table for the first and second layer 3 VPNs.

7. (Original) The computer implemented method of claim 6 further comprising:

separately maintaining a third set of information for a non-VPN customer, the

third set of information for including a third value identifying the non-

VPN customer; and

maintaining a second EGP table for the non-VPN customer.

8. (Original) The computer implemented method of claim 6 further comprising:

maintaining a first routing table for the first layer 3 VPN;

maintaining a second routing table for the second layer 3 VPN;

updating a set entries for the first layer 3 VPN in the single EGP table, each of the

set of entries indicating the first route distinguisher;

mapping the first route distinguisher to the first value; and

indicating the mapped first value in communication about the updated set of

entries.

9. (Original) The computer implemented method of claim 6 further comprising:

maintaining a data structure for the single EGP table, the data structure indicating

the association between first value and the first route distinguisher and

between the second value and the second route distinguisher; and

performing mappings between the first value and the first route distinguisher and

between the second value and the second route distinguisher with the data

structure.

10. (Canceled)

11. (Canceled)

12. (Canceled)

13. (Canceled)

14. (Canceled)

15. (Canceled)

16. (Canceled)

17. (Canceled)

18. (Canceled)

19. (Canceled)

20. (Canceled)

21. (Canceled)

22. (Canceled)

23. (Currently Amended) A machine-readable medium that provides instructions,
which when executed by a set of one or more processors, cause said set of processors to
perform operations comprising:

> maintaining a set of information for a first layer 3 VPN (virtual private network
> ~~(VPN)~~, the first set of information for including a first value identifying
> the first layer 3 VPN;
>
> separately maintaining a second set of information for a second layer 3 VPN, the
> second set of information for including a second value identifying the
> second layer 3 VPN;
>
> associating the first value with a RD (first route distinguisher ~~(RD)~~;
>
> associating the second value with a second RD;
>
> maintaining a data structure to perform mappings between the first value and the
> first RD and between the second value and the second RD; and
>
> maintaining a single exterior EGP (gateway protocol ~~(EGP)~~ table for the first and
> second layer 3 VPNs.

24. (Original) The machine-readable medium of claim 23 further comprising:

separately maintaining a third set of information for a non-VPN customer, the

third set of information for including a third value identifying the non-

VPN customer; and

maintaining a second EGP table for the non-VPN customer.

25. (Original) The machine-readable medium of claim 23 wherein the mappings are

performed for communications about the single EGP table.

26. (Currently Amended) A machine-readable medium that provides instructions,

which when executed by a set of one or more processors, cause said set of processors to

perform operations comprising:

storing a first set of configuration information for a non-_VPN (_ virtual private

network (VPN) customer;

storing a second set of configuration information for a first layer 3 VPN, the

second set of configuration information including a first value identifying

the first layer 3 VPN;

associating the first value with a first RD (route distinguisher (RD);

storing a third set of configuration information for a second layer 3 VPN, the third

set of configuration information including a second value identifying the

second layer 3 VPN;

associating the second value with a second RD;

creating a first EGP (exterior gateway protocol (EGP) table and a first routing

table for the non-VPN customer;

creating a second EGP table for the first and the second layer 3 VPNs;

creating a second routing table for the first layer 3 VPN and a third routing table

for the second layer 3 VPN;

mapping between the first value and the first RD to communicate modifications

and to service requests for a set of entries in the second EGP table, the set

of entries corresponding to the first layer 3 VPN.

27.   (Original) The machine-readable medium of claim 26 further comprising

mapping between the second value and the second RD to communicate

modifications and to service requests for a second set of entries in the

second EGP table, the second set of entries corresponding to the second

layer 3 VPN.

28.   (Original) The machine-readable medium of claim 26 wherein each of the set of

entries in the second EGP table indicate the first RD.

29.   (Original) The machine-readable medium of claim 26 wherein the non-VPN

customer and a customer provided the first layer 3 VPN are the same entity.

30.   (Currently Amended) A machine-readable medium that provides instructions,

which when executed by a set of one or more processors, cause said set of processors to

perform operations comprising:

maintaining a first set of information for a first layer 3 VPN (virtual private

network (VPN), the set of information for including a first value

identifying the first layer 3 VPN;

separately maintaining a second set of information for a second layer 3 VPN, the

second set of information including a second value identifying the second

layer 3 VPN;

associating the first value with a first route distinguisher;

associating the second value with a second route distinguisher; and

maintaining a single EGP (exterior gateway protocol (EGP) table for the first and

second layer 3 VPNs.

31.   (Original) The machine-readable medium of claim 30 further comprising:

separately maintaining a third set of information for a non-VPN customer, the

third set of information including a third value identifying the non-VPN

customer; and

maintaining a second EGP table for the non-VPN customer.

32.   (Original) The machine-readable medium of claim 30 further comprising:

maintaining a first routing table for the first layer 3 VPN;

maintaining a second routing table for the second layer 3 VPN;

updating a set entries for the first layer 3 VPN in the single EGP table, each of the

set of entries indicating the first route distinguisher;

mapping the first route distinguisher to the first value; and

indicating the mapped first value in communication about the updated set of

entries.

33.   (Original) The machine-readable medium of claim 30 further comprising:

maintaining a data structure for the single EGP table, the data structure indicating

the association between first value and the first route distinguisher and

between the second value and the second route distinguisher; and

performing mappings between the first value and the first route distinguisher and

between the second value and the second route distinguisher with the data

structure.